Name : Tupakula Vaishnavi

In [2]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [3]:
```
sns.get_dataset_names()
```

Out[3]:
```
['anagrams',
 'anscombe',
 'attention',
 'brain_networks',
 'car_crashes',
 'diamonds',
 'dots',
 'dowjones',
 'exercise',
 'flights',
 'fmri',
 'geyser',
 'glue',
 'healthexp',
 'iris',
 'mpg',
 'penguins',
 'planets',
 'seaice',
 'taxis',
 'tips',
 'titanic']
```

In [4]:
```
df=sns.load_dataset('car_crashes')
```

In [5]:
```
df
```

Out[5]:

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_losses	abbrev
0	18.8	7.332	5.640	18.048	15.040	784.55	145.08	AL
1	18.1	7.421	4.525	16.290	17.014	1053.48	133.93	AK
2	18.6	6.510	5.208	15.624	17.856	899.47	110.35	AZ
3	22.4	4.032	5.824	21.056	21.280	827.34	142.39	AR
4	12.0	4.200	3.360	10.920	10.680	878.41	165.63	CA
5	13.6	5.032	3.808	10.744	12.920	835.50	139.91	CO
6	10.8	4.968	3.888	9.396	8.856	1068.73	167.02	CT
7	16.2	6.156	4.860	14.094	16.038	1137.87	151.48	DE
8	5.9	2.006	1.593	5.900	5.900	1273.89	136.05	DC
9	17.9	3.759	5.191	16.468	16.826	1160.13	144.18	FL
10	15.6	2.964	3.900	14.820	14.508	913.15	142.80	GA
11	17.5	9.450	7.175	14.350	15.225	861.18	120.92	HI
12	15.3	5.508	4.437	13.005	14.994	641.96	82.75	ID
13	12.8	4.608	4.352	12.032	12.288	803.11	139.15	IL
14	14.5	3.625	4.205	13.775	13.775	710.46	108.92	IN
15	15.7	2.669	3.925	15.229	13.659	649.06	114.47	IA
16	17.8	4.806	4.272	13.706	15.130	780.45	133.80	KS
17	21.4	4.066	4.922	16.692	16.264	872.51	137.13	KY
18	20.5	7.175	6.765	14.965	20.090	1281.55	194.78	LA
19	15.1	5.738	4.530	13.137	12.684	661.88	96.57	ME
20	12.5	4.250	4.000	8.875	12.375	1048.78	192.70	MD
21	8.2	1.886	2.870	7.134	6.560	1011.14	135.63	MA
22	14.1	3.384	3.948	13.395	10.857	1110.61	152.26	MI
23	9.6	2.208	2.784	8.448	8.448	777.18	133.35	MN
24	17.6	2.640	5.456	1.760	17.600	896.07	155.77	MS
25	16.1	6.923	5.474	14.812	13.524	790.32	144.45	MO
26	21.4	8.346	9.416	17.976	18.190	816.21	85.15	MT
27	14.9	1.937	5.215	13.857	13.410	732.28	114.82	NE
28	14.7	5.439	4.704	13.965	14.553	1029.87	138.71	NV
29	11.6	4.060	3.480	10.092	9.628	746.54	120.21	NH
30	11.2	1.792	3.136	9.632	8.736	1301.52	159.85	NJ
31	18.4	3.496	4.968	12.328	18.032	869.85	120.75	NM
32	12.3	3.936	3.567	10.824	9.840	1234.31	150.01	NY
33	16.8	6.552	5.208	15.792	13.608	708.24	127.82	NC
34	23.9	5.497	10.038	23.661	20.554	688.75	109.72	ND

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_losses	abbrev
35	14.1	3.948	4.794	13.959	11.562	697.73	133.52	OH
36	19.9	6.368	5.771	18.308	18.706	881.51	178.86	OK
37	12.8	4.224	3.328	8.576	11.520	804.71	104.61	OR
38	18.2	9.100	5.642	17.472	16.016	905.99	153.86	PA
39	11.1	3.774	4.218	10.212	8.769	1148.99	148.58	RI
40	23.9	9.082	9.799	22.944	19.359	858.97	116.29	SC
41	19.4	6.014	6.402	19.012	16.684	669.31	96.87	SD
42	19.5	4.095	5.655	15.990	15.795	767.91	155.57	TN
43	19.4	7.760	7.372	17.654	16.878	1004.75	156.83	TX
44	11.3	4.859	1.808	9.944	10.848	809.38	109.48	UT
45	13.6	4.080	4.080	13.056	12.920	716.20	109.61	VT
46	12.7	2.413	3.429	11.049	11.176	768.95	153.72	VA
47	10.6	4.452	3.498	8.692	9.116	890.03	111.62	WA
48	23.8	8.092	6.664	23.086	20.706	992.61	152.56	WV
49	13.8	4.968	4.554	5.382	11.592	670.31	106.62	WI
50	17.4	7.308	5.568	14.094	15.660	791.14	122.04	WY

In [6]:

```
df.info
```

Out[6]:
```
<bound method DataFrame.info of     total  speeding  alcohol  not_distra
cted  no_previous  ins_premium  \
0    18.8     7.332    5.640         18.048       15.040      784.55
1    18.1     7.421    4.525         16.290       17.014     1053.48
2    18.6     6.510    5.208         15.624       17.856      899.47
3    22.4     4.032    5.824         21.056       21.280      827.34
4    12.0     4.200    3.360         10.920       10.680      878.41
5    13.6     5.032    3.808         10.744       12.920      835.50
6    10.8     4.968    3.888          9.396        8.856     1068.73
7    16.2     6.156    4.860         14.094       16.038     1137.87
8     5.9     2.006    1.593          5.900        5.900     1273.89
9    17.9     3.759    5.191         16.468       16.826     1160.13
10   15.6     2.964    3.900         14.820       14.508      913.15
11   17.5     9.450    7.175         14.350       15.225      861.18
12   15.3     5.508    4.437         13.005       14.994      641.96
13   12.8     4.608    4.352         12.032       12.288      803.11
14   14.5     3.625    4.205         13.775       13.775      710.46
15   15.7     2.669    3.925         15.229       13.659      649.06
16   17.8     4.806    4.272         13.706       15.130      780.45
17   21.4     4.066    4.922         16.692       16.264      872.51
18   20.5     7.175    6.765         14.965       20.090     1281.55
19   15.1     5.738    4.530         13.137       12.684      661.88
20   12.5     4.250    4.000          8.875       12.375     1048.78
21    8.2     1.886    2.870          7.134        6.560     1011.14
22   14.1     3.384    3.948         13.395       10.857     1110.61
23    9.6     2.208    2.784          8.448        8.448      777.18
24   17.6     2.640    5.456          1.760       17.600      896.07
25   16.1     6.923    5.474         14.812       13.524      790.32
26   21.4     8.346    9.416         17.976       18.190      816.21
27   14.9     1.937    5.215         13.857       13.410      732.28
28   14.7     5.439    4.704         13.965       14.553     1029.87
29   11.6     4.060    3.480         10.092        9.628      746.54
30   11.2     1.792    3.136          9.632        8.736     1301.52
31   18.4     3.496    4.968         12.328       18.032      869.85
32   12.3     3.936    3.567         10.824        9.840     1234.31
33   16.8     6.552    5.208         15.792       13.608      708.24
34   23.9     5.497   10.038         23.661       20.554      688.75
35   14.1     3.948    4.794         13.959       11.562      697.73
36   19.9     6.368    5.771         18.308       18.706      881.51
37   12.8     4.224    3.328          8.576       11.520      804.71
38   18.2     9.100    5.642         17.472       16.016      905.99
39   11.1     3.774    4.218         10.212        8.769     1148.99
40   23.9     9.082    9.799         22.944       19.359      858.97
41   19.4     6.014    6.402         19.012       16.684      669.31
42   19.5     4.095    5.655         15.990       15.795      767.91
43   19.4     7.760    7.372         17.654       16.878     1004.75
44   11.3     4.859    1.808          9.944       10.848      809.38
45   13.6     4.080    4.080         13.056       12.920      716.20
46   12.7     2.413    3.429         11.049       11.176      768.95
47   10.6     4.452    3.498          8.692        9.116      890.03
48   23.8     8.092    6.664         23.086       20.706      992.61
49   13.8     4.968    4.554          5.382       11.592      670.31
50   17.4     7.308    5.568         14.094       15.660      791.14

    ins_losses abbrev
0       145.08     AL
1       133.93     AK
```

```
2       110.35     AZ
3       142.39     AR
4       165.63     CA
5       139.91     CO
6       167.02     CT
7       151.48     DE
8       136.05     DC
9       144.18     FL
10      142.80     GA
11      120.92     HI
12       82.75     ID
13      139.15     IL
14      108.92     IN
15      114.47     IA
16      133.80     KS
17      137.13     KY
18      194.78     LA
19       96.57     ME
20      192.70     MD
21      135.63     MA
22      152.26     MI
23      133.35     MN
24      155.77     MS
25      144.45     MO
26       85.15     MT
27      114.82     NE
28      138.71     NV
29      120.21     NH
30      159.85     NJ
31      120.75     NM
32      150.01     NY
33      127.82     NC
34      109.72     ND
35      133.52     OH
36      178.86     OK
37      104.61     OR
38      153.86     PA
39      148.58     RI
40      116.29     SC
41       96.87     SD
42      155.57     TN
43      156.83     TX
44      109.48     UT
45      109.61     VT
46      153.72     VA
47      111.62     WA
48      152.56     WV
49      106.62     WI
50      122.04     WY  >
```

In [7]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 51 entries, 0 to 50
Data columns (total 8 columns):
 #   Column          Non-Null Count  Dtype  
---  ------          --------------  -----  
 0   total           51 non-null     float64
 1   speeding        51 non-null     float64
 2   alcohol         51 non-null     float64
 3   not_distracted  51 non-null     float64
 4   no_previous     51 non-null     float64
 5   ins_premium     51 non-null     float64
 6   ins_losses      51 non-null     float64
 7   abbrev          51 non-null     object 
dtypes: float64(7), object(1)
memory usage: 3.3+ KB
```

In [8]:
```
df.describe()
```

Out[8]:

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_los
count	51.000000	51.000000	51.000000	51.000000	51.000000	51.000000	51.000
mean	15.790196	4.998196	4.886784	13.573176	14.004882	886.957647	134.493
std	4.122002	2.017747	1.729133	4.508977	3.764672	178.296285	24.835
min	5.900000	1.792000	1.593000	1.760000	5.900000	641.960000	82.750
25%	12.750000	3.766500	3.894000	10.478000	11.348000	768.430000	114.645
50%	15.600000	4.608000	4.554000	13.857000	13.775000	858.970000	136.050
75%	18.500000	6.439000	5.604000	16.140000	16.755000	1007.945000	151.870
max	23.900000	9.450000	10.038000	23.661000	21.280000	1301.520000	194.780

In [9]:
```
df.head()
```

Out[9]:

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_losses	abbrev
0	18.8	7.332	5.640	18.048	15.040	784.55	145.08	AL
1	18.1	7.421	4.525	16.290	17.014	1053.48	133.93	AK
2	18.6	6.510	5.208	15.624	17.856	899.47	110.35	AZ
3	22.4	4.032	5.824	21.056	21.280	827.34	142.39	AR
4	12.0	4.200	3.360	10.920	10.680	878.41	165.63	CA

In [10]:
```
df.tail()
```

Out[10]:

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_losses	abbrev
46	12.7	2.413	3.429	11.049	11.176	768.95	153.72	VA
47	10.6	4.452	3.498	8.692	9.116	890.03	111.62	WA
48	23.8	8.092	6.664	23.086	20.706	992.61	152.56	WV
49	13.8	4.968	4.554	5.382	11.592	670.31	106.62	WI
50	17.4	7.308	5.568	14.094	15.660	791.14	122.04	WY

```
car_crashes
Accidents in the states of the USA are examined. This is the data set of
the cause of the accidents and the cost
to the accident insurance companies.

· total -> Number of drivers involved in fatal collisions per billion miles
(5.900-23.900)

· speeding -> Percentage Of Drivers Involved In Fatal Collisions Who Were
Speeding (1.792-9.450)

· alcohol -> Percentage Of Drivers Involved In Fatal Collisions Who Were
Alcohol-Impaired (1.593-10.038)

· not_distracted -> Percentage Of Drivers Involved In Fatal Collisions Who
Were Not Distracted (1.760-23.661)

· no_previous -> Percentage Of Drivers Involved In Fatal Collisions Who Had
Not Been Involved In Any Previous
  Accidents (5.900-21.280)

· ins_premium -> Car Insurance Premiums (641.960-1301.520)

· ins_losses -> Losses incurred by insurance companies for collisions per
insured driver (82.75-194.780)

· abbrev -> USA states
```

In [11]:
```
df.isnull().any()
```

Out[11]:
```
total             False
speeding          False
alcohol           False
not_distracted    False
no_previous       False
ins_premium       False
ins_losses        False
abbrev            False
dtype: bool
```

In [12]:
```
df.isnull().sum()
```

Out[12]:
```
total            0
speeding         0
alcohol          0
not_distracted   0
no_previous      0
ins_premium      0
ins_losses       0
abbrev           0
dtype: int64
```

In [13]:
```
df.isna().sum()
```

Out[13]:
```
total            0
speeding         0
alcohol          0
not_distracted   0
no_previous      0
ins_premium      0
ins_losses       0
abbrev           0
dtype: int64
```

In [ ]:
```

```

In [14]:
```
corr=df.corr()
corr
```

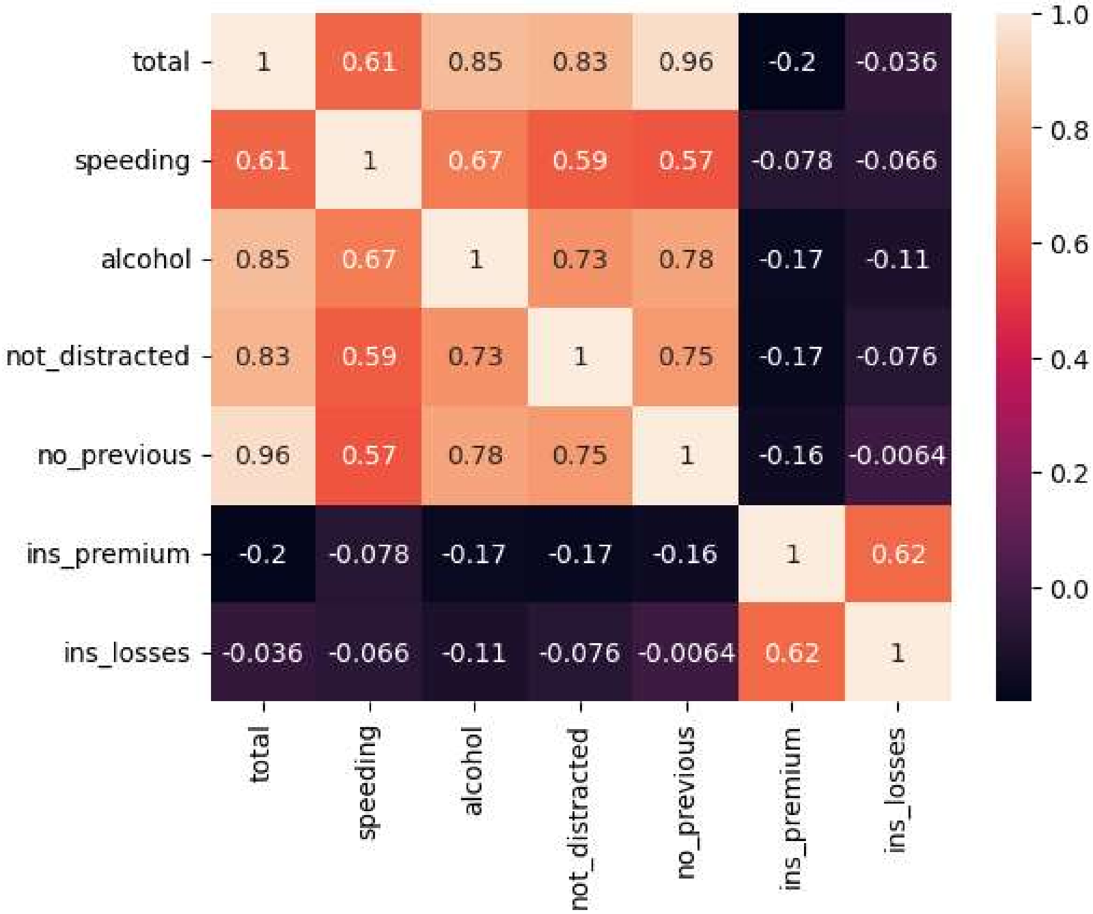
```
C:\Users\TUPAKULA VAISHNAVI\AppData\Local\Temp\ipykernel_95376\318214091
0.py:1: FutureWarning: The default value of numeric_only in DataFrame.co
rr is deprecated. In a future version, it will default to False. Select
only valid columns or specify the value of numeric_only to silence this
warning.
  corr=df.corr()
```

Out[14]:

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	i
total	1.000000	0.611548	0.852613	0.827560	0.956179	-0.199702	
speeding	0.611548	1.000000	0.669719	0.588010	0.571976	-0.077675	
alcohol	0.852613	0.669719	1.000000	0.732816	0.783520	-0.170612	
not_distracted	0.827560	0.588010	0.732816	1.000000	0.747307	-0.174856	
no_previous	0.956179	0.571976	0.783520	0.747307	1.000000	-0.156895	
ins_premium	-0.199702	-0.077675	-0.170612	-0.174856	-0.156895	1.000000	
ins_losses	-0.036011	-0.065928	-0.112547	-0.075970	-0.006359	0.623116	

In [15]:
```
sns.heatmap(corr,annot=True)
```

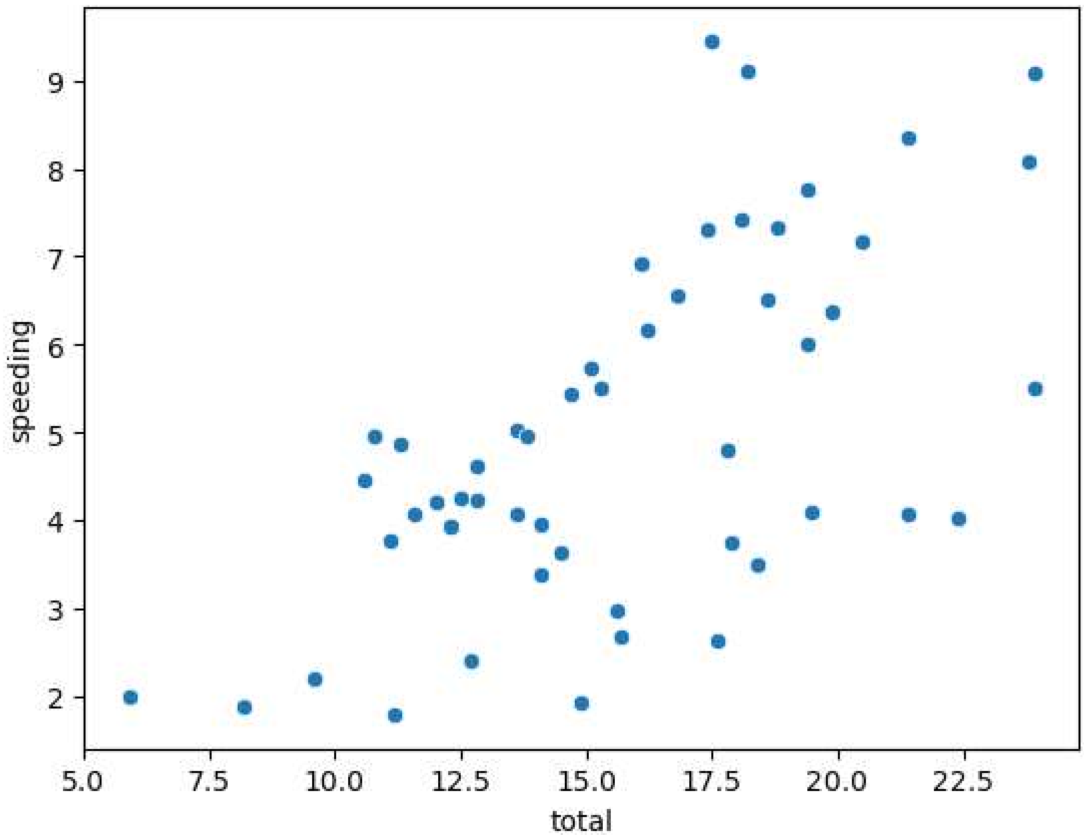
Out[15]: <Axes: >



Scatterplot

In [16]:
```
sns.scatterplot(x='total',y='speeding',data=df)
```

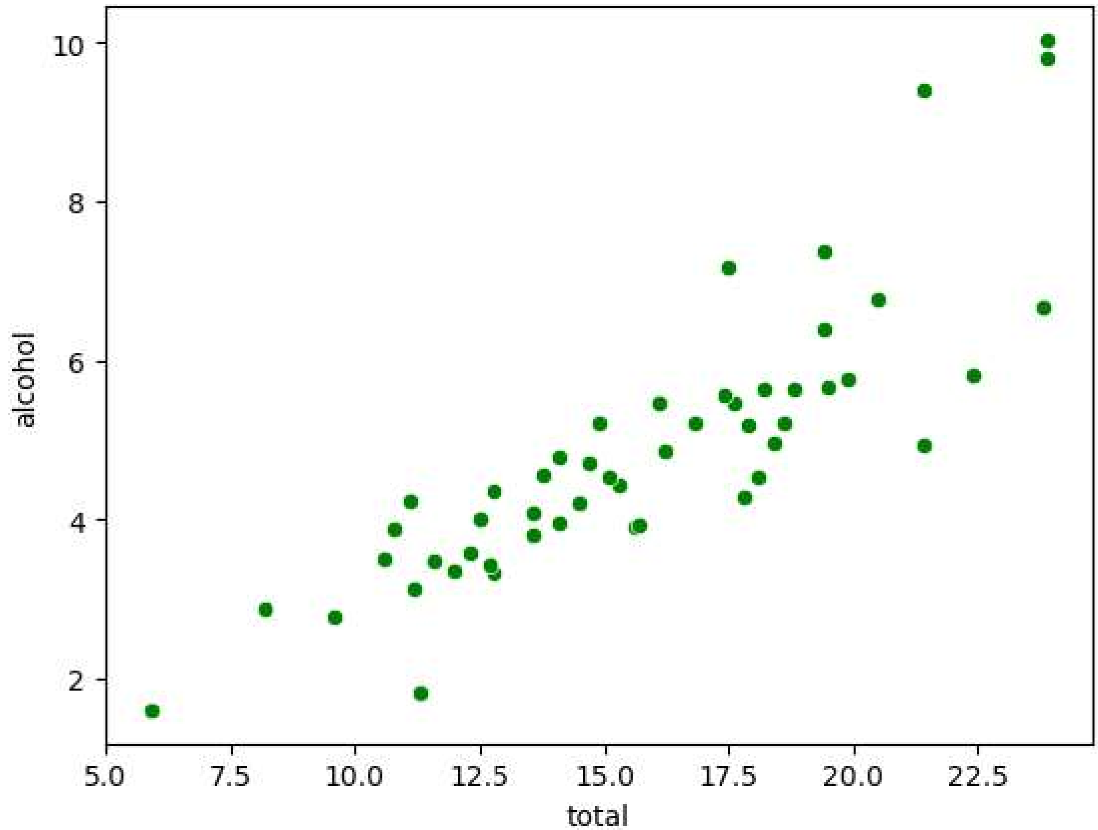
Out[16]: <Axes: xlabel='total', ylabel='speeding'>




```
Inference : From the graph it is evident that the total Number of drivers involved
            in fatal collisions is linearly proportional Percentage Of Drivers
            Involved In Fatal Collisions,Who were speeding.
```

In [18]:
```
sns.scatterplot(x='total',y='alcohol',data=df,color="g")
```

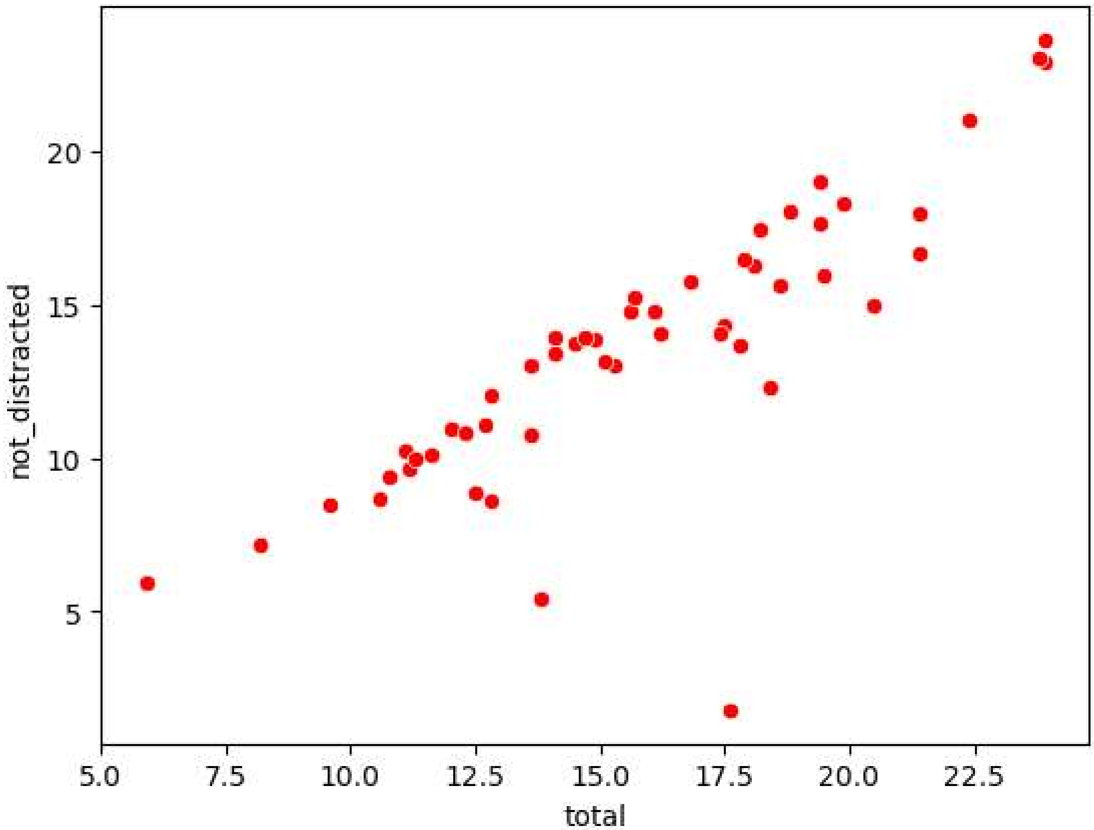
Out[18]: <Axes: xlabel='total', ylabel='alcohol'>




```
Inference : From the graph it is evident that the total Number of drivers
involved
            in fatal collisions is linearly proportional Percentage Of
Drivers
            Involved In Fatal Collisions,consuming alcohol.
```

In [20]:
```
sns.scatterplot(x='total',y='not_distracted',data=df,color='r')
```

Out[20]: <Axes: xlabel='total', ylabel='not_distracted'>

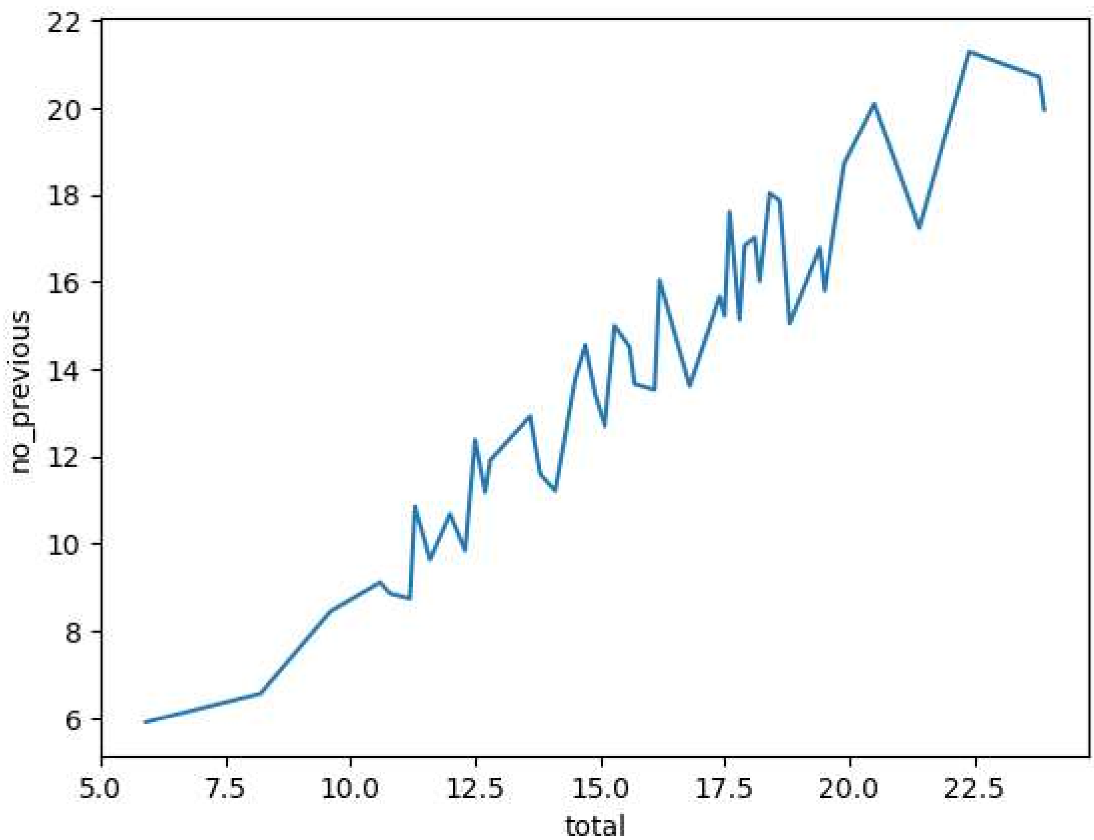



```
Inference : From the graph it is evident that the total Number of drivers involved
            in fatal collisions is linearly proportional Percentage Of Drivers
            Involved In Fatal Collisions Who Were Not Distracted.
```

Line Plot

In [21]:
```
sns.lineplot(x="total",y="no_previous",data=df,errorbar=None)
```

Out[21]: <Axes: xlabel='total', ylabel='no_previous'>

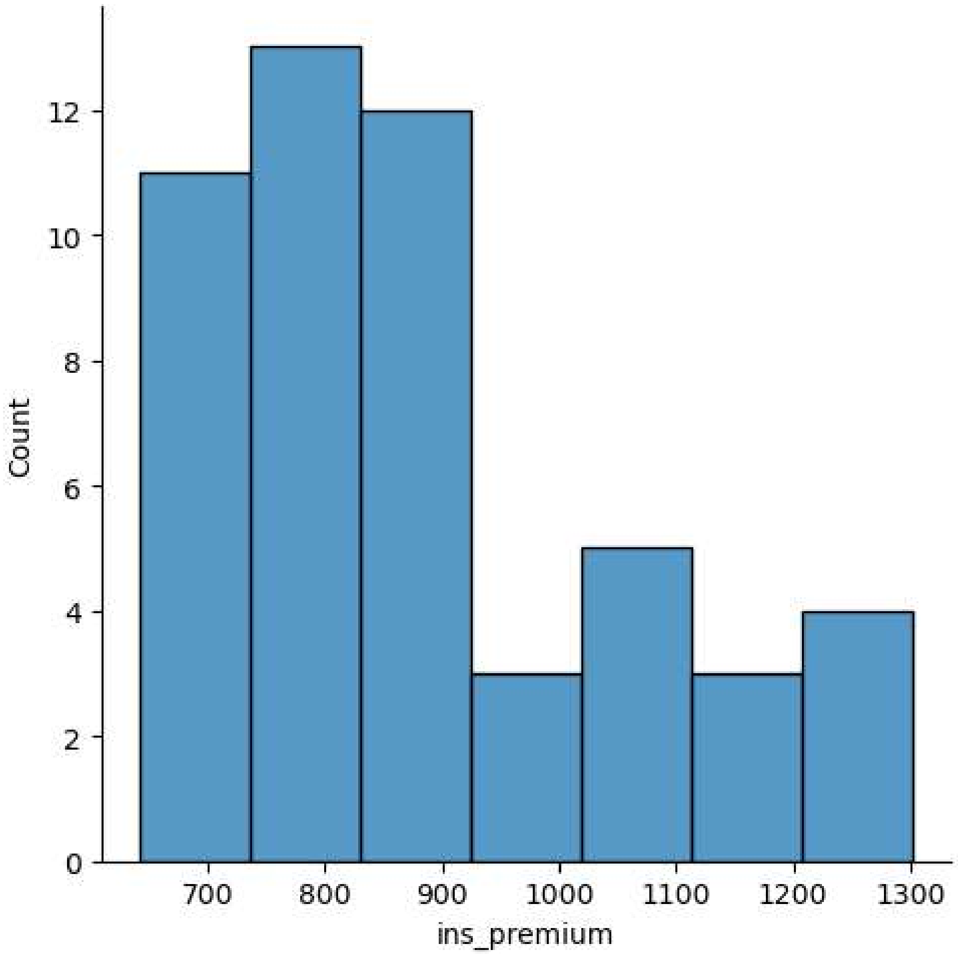



```
Inference : From the graph it is evident that the total Number of drivers involved
            in fatal collisions is linearly proportional Percentage Of Drivers
            Involved In Fatal Collisions Who do not have previous accidents.
```

Distribution plot

In [22]:
```
sns.displot(df['ins_premium'])
```

Out[22]: <seaborn.axisgrid.FacetGrid at 0x1e55caf4710>

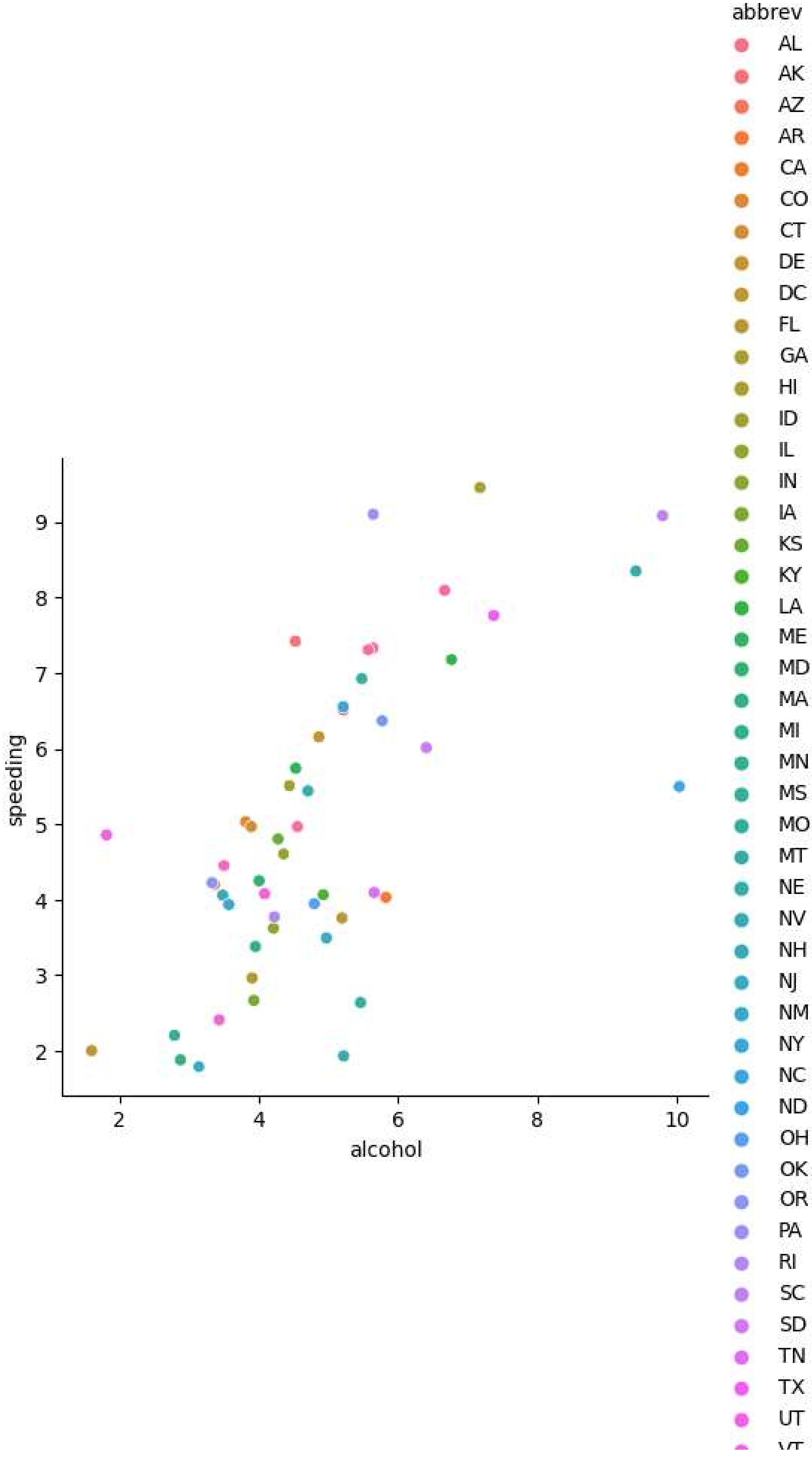



```
Inference : ins_premium mostly lies between 300 to 900
```

RelPlot

In [23]:
```
sns.relplot(x='alcohol',y='speeding',data=df,hue="abbrev")
```

Out[23]:
```
<seaborn.axisgrid.FacetGrid at 0x1e55cb98c10>
```

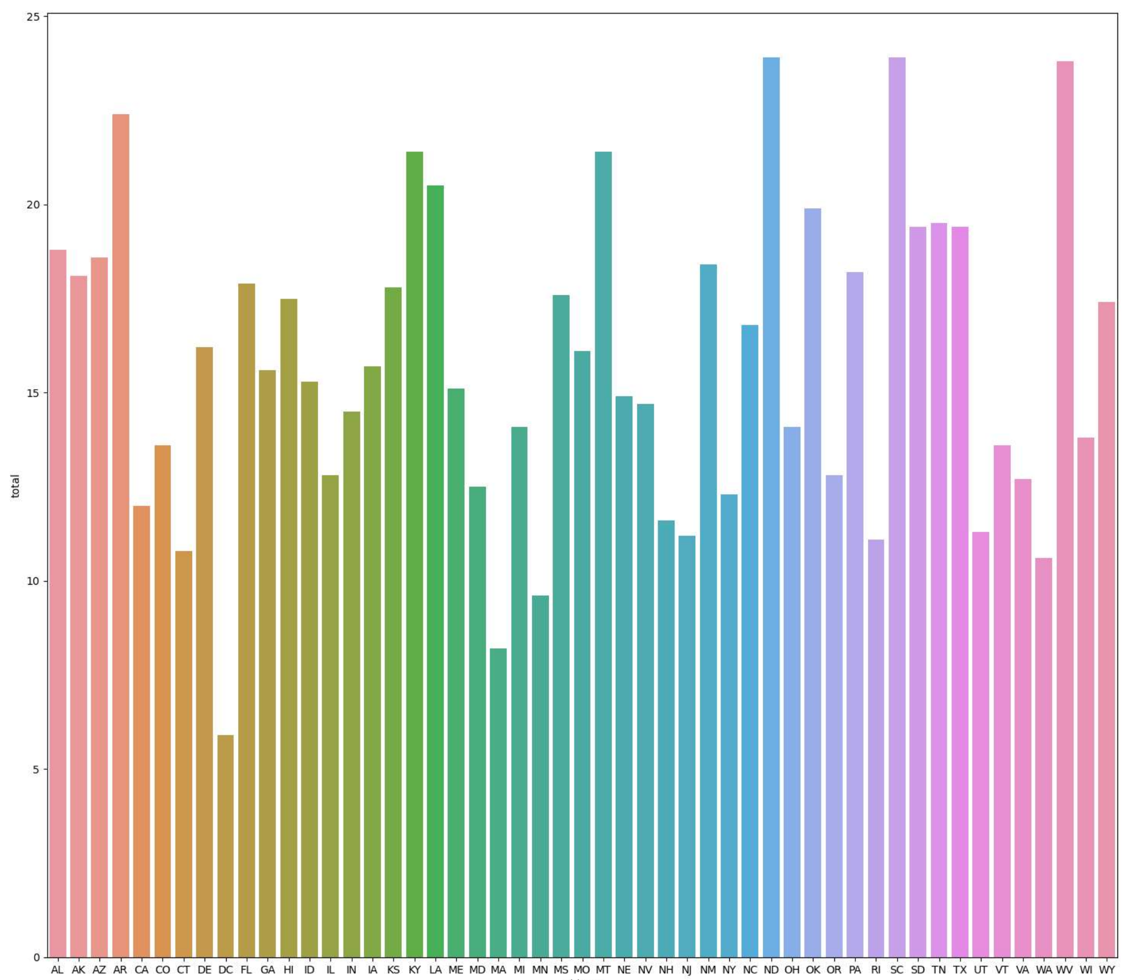

abbrev
AL
AK
AZ
AR
CA
CO
CT
DE
DC
FL
GA
HI
ID
IL
IN
IA
KS
KY
LA
ME
MD
MA
MI
MN
MS
MO
MT
NE
NV
NH
NJ
NM
NY
NC
ND
OH
OK
OR
PA
RI
SC
SD
TN
TX
UT
speeding
alcohol
2
3
4
5
6
7
8
9
10


```
Inference : With an increase in alcohol consumption , speeding also
increases
```

BarPlot

In [27]:

```python
plt.figure(figsize=(18, 16))
sns.barplot(data=df,x="abbrev",y="total")
plt.show()
```



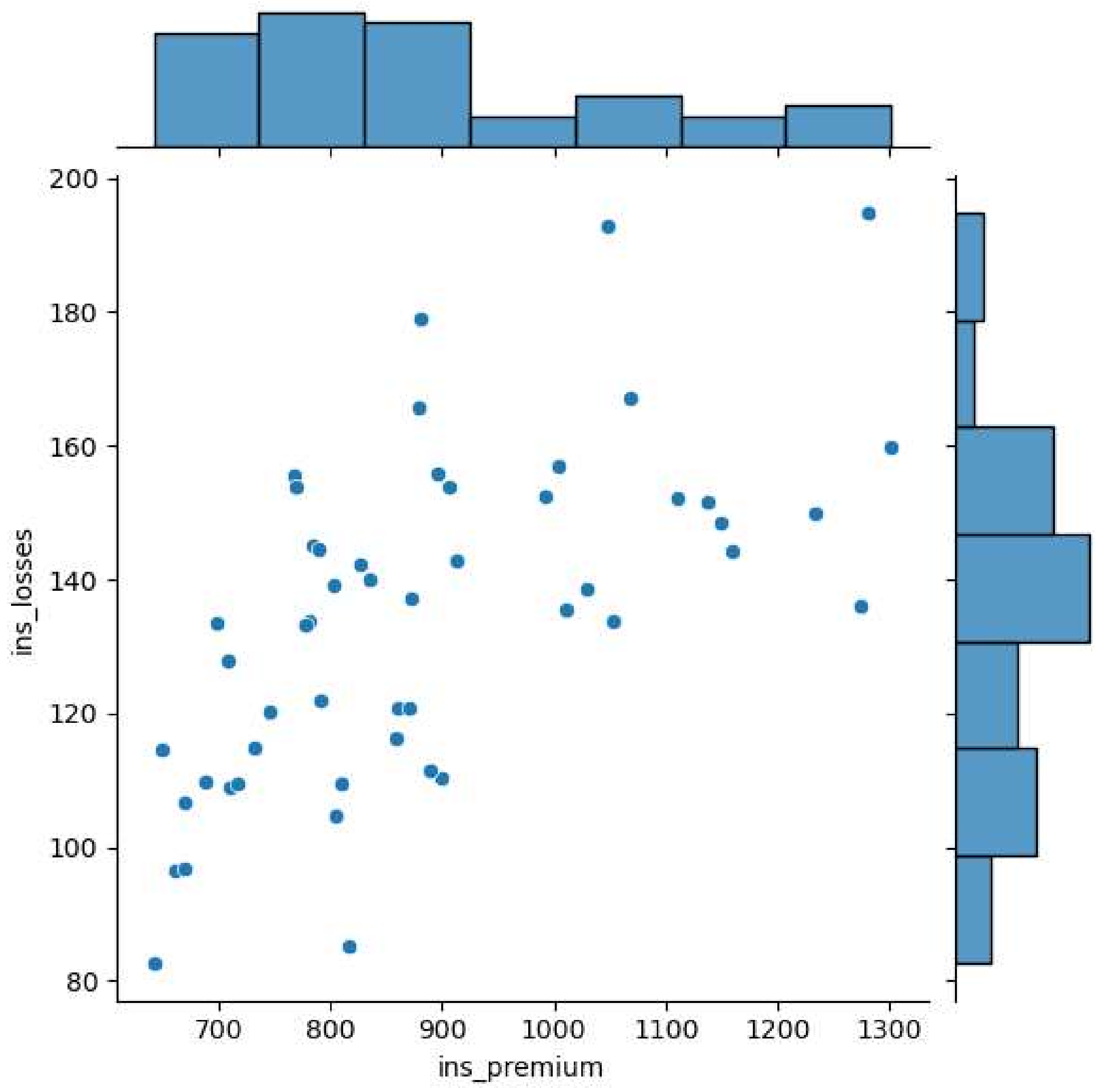
```
Inference : State ND has the total no.of highest collisions
```

JointPlot

In [29]:

```
sns.jointplot(x="ins_premium",y="ins_losses",data=df)
```

Out[29]: <seaborn.axisgrid.JointGrid at 0x1e55cb6b510>

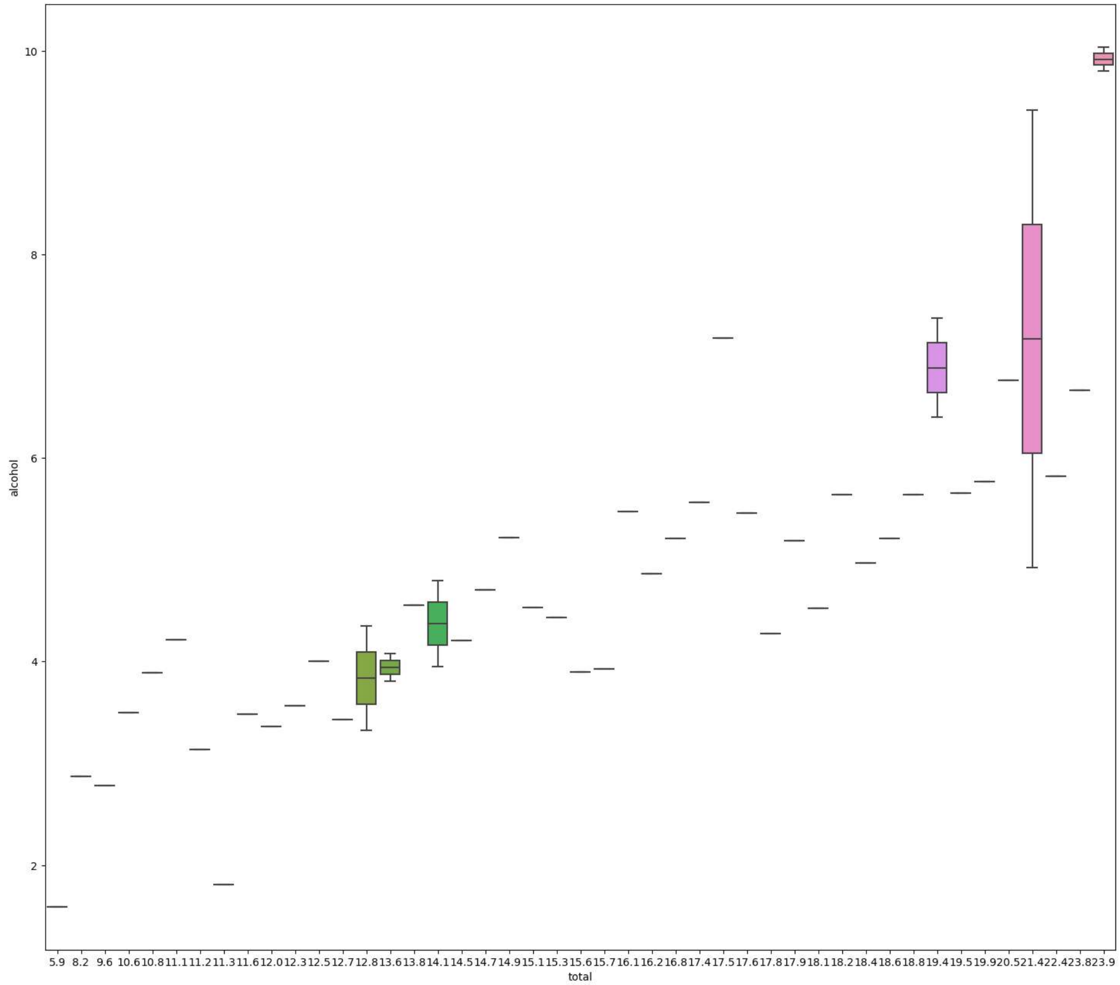



```
Inference : Premium and losses are directly related
```

BoxPlot

In [30]:

```
plt.figure(figsize=(18, 16))
sns.boxplot(x=df["total"],y=df["alcohol"],data=df)
plt.show()
```



Inference : There are no outliers

In [ ]: